

Remarks

The specification has been amended on page 2 to enter the serial number and filing date of a related patent application.

Claims 1 and 9 are rejected as being anticipated under 35 U.S.C. § 102(e) by Rosi patent 6,569,060. A reconsideration of that rejection is solicited respectfully in view of the comments in the following paragraphs.

Claim 1 recites a speed based control system for a swap-shift transmission. Claim 9 recites an adaptive pressure control method for a swap-shift transmission. Applicants' claims deal with a ratio shift for a swap-shift transmission. The swap-shift transmission comprises separate gearsets, which are identified in claims 1 and 9 as first and second gearsets. Each gearset has ratio control friction elements to establish each of two gear ratios. The friction elements of one gearset establish a ratio change from one ratio to another in that gearset. Similarly, the friction elements of the other gearset establish each of two gear ratios independently of the establishment of gear ratios in the first gearset.

In the particular powertrain of the present application, the first gearset is the overdrive gearset, shown at 16 in Figure 1a. The second gearset is a Simpson gearset, shown at 18 in Figure 1a. An overdrive gearset controller will establish a control pressure on the first pressure actuated friction element for the overdrive gearset. A second gearset controller will control pressure on a second pressure actuated friction element for the second gearset. At the outset of a swap upshift, for example, the friction element pressures for the overdrive gearset and the Simpson gearset are separately controlled.

At the beginning of a shift event, the pressure for the friction element of the Simpson gearset is increased and the pressure on the friction element for the overdrive gearset is decreased during a shift progression. The Simpson gearset friction element pressure is increased, as shown by the symbol "A" in Figure 4a. This is done before a torque transfer begins at the instant indicated by the symbol "B" in Figure 4a. At this instant, the overdrive friction element continues to deliver torque because it has not yet begun to slip. This is indicated by the symbol "C" in Figure 4d. If there is an error in the boost pressure time for

the Simpson gearset, a boost time adjustment will be made for the friction element of the Simpson gearset during a subsequent shift.

In contrast to the invention defined by claims 1 and 9, the control method of the reference '060 patent involves a single transmission. There is no counterpart whatsoever for the applicants' first and second independent gearsets. In the embodiment disclosed in the present application, one of the independent gearsets is an overdrive gearset and the other is a Simpson gearset. A shift in a transmission using the strategy of the '060 patent merely involves disengagement of one friction element and engagement of a second friction element in the same transmission.

In the case of the engaging element of the transmission of the '060 patent, the friction element actuator is rapidly filled during a time interval of t_{sf} , as indicated in Figure 3 of the '060 patent. That rapid filling is not followed by a torque transfer phase. Rather, it is followed by a filling equalization phase t_f . If the engaging clutch of the transmission of the '060 patent is applied too quickly relative to a release of pressure of the off-going friction element, the boost time will be adjusted by a value indicated at t_{adtsf} .

The control strategy of the design of the '060 patent is so dissimilar from applicants' invention that a limitation-to-limitation analysis is impossible. Applicants' control strategy is designed for a swap-shift transmission having two separate gearsets, each gearset having friction elements for controlling upshifts and downshifts independently of the upshifting and downshifting of the other gearset. The transmission disclosed in the '060 patent is not a swap-shift transmission.

Applicants' friction element boost time adjustment for the Simpson gearset will affect the starting time for a torque transfer in the Simpson gearset. A ratio change will not occur until a starting pressure adjustment is made in the overdrive gearset. When a ratio change begins in the overdrive gearset, the friction element for the overdrive gearset begins to slip.

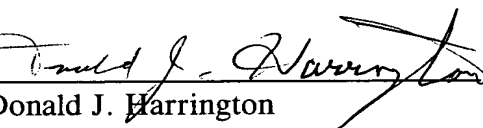
Claim 5 is rejected as being unpatentable over the '060 patent in view of reference patent 5,911,647. The '647 patent discloses three speed sensors, as indicated by the Examiner, but they are used in an entirely different transmission environment. In the case of applicants' invention, a speed sensor "ISS" is used to measure input speed for the forward

clutch CL4, a turbine speed sensor "TSS" is used to measure turbine speed, and an output shaft speed sensor "OSS" is used to measure the speed of the driven shaft. The engine speed sensor 106 of the '647 patent has no counterpart in applicants' arrangement, where engine speed is not measured. In any case, there is no suggestion in the '647 patent that the speed sensors disclosed in that patent could be applied to the system of the '060 patent. The speed sensors of the '647 patent are used for a purpose that is entirely different than the purpose for which speed sensors would be used in the controller disclosed in the '060 patent.

In the case of the '060 patent, only turbine speed is used in the control strategy. It would be meaningless, therefore, to attempt to apply the teachings of the '647 patent to the teachings of the '060 patent. In any case, a combination of the teachings of the '647 patent with the teachings of the '060 patent is not proper since there is no motivation for making that combination without relying upon applicants' own disclosure. It is improper to use applicants' disclosure to provide a rationale for making a combination of references in an obviousness determination under 35 U.S.C. § 103(a).

A favorable reconsideration of the rejection of claims 1, 5 and 9 is requested and the issuance of a Notice of Allowance is respectfully solicited.

Respectfully submitted,
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